CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO: 90-032

SITE CLEANUP REQUIREMENTS FOR:

FMC CORPORATION GROUND SYSTEMS DIVISION
AND 495 EAST BROKAW ASSOCIATES,

FOR THE PROPERTY LOCATED AT:

495 EAST BROKAW ROAD
SAN JOSE
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. SITE DESCRIPTION FMC Corporation (FMC) formerly occupied and owned the approximately five acre property located at 495 East Brokaw Road in northeastern San Jose, Santa Clara County (the Site). The site is bounded by East Brokaw Road on the south and Southern Pacific Company right-of-way to the west. The property is surrounded by buildings or other properties on the north and east.

2. SITE HISTORY Before 1962, land use in the area was primarily agricultural. In 1962, the Site was owned by the Annuity Board of Southern Baptist Convention, which leased the site on January 1, 1963 to the Olin Mathieson Chemical Corporation (Olin Corporation), however, the present site building was originally constructed for American International Aluminum. In 1966, Olin subleased the site to FMC, which used it from 1966 to 1987 for manufacturing and assembly of military ordnance and commercial logging equipment. Olin assigned its lease, effective January 1, 1974, to Consolidated Aluminum Corporation (Conalco). On January 1, 1975, Conalco assigned its lease interest to FMC, and FMC later purchased the property from Southern Baptist on May 3, 1983. In October, 1987, FMC sold the property to 6000 S Corporation. 6000 S Corporation then sold the property in September 1988, to 495 East Brokaw Associates, a limited California partnership (Brokaw Associates). The present owners lease a 76,000 square foot steel framed building to three separate business entities: Anderson Welding and Fabricators, manufacturers and fabricators of sheet metal products; Nelson Truck Body, fabricators and installers of aftermarket truck bodies; and Equipment Services, a heavy vehicle repair shop.

3. REGULATORY STATUS FMC (hereinafter referred to as a discharger) is a discharger because of their former occupancy and ownership of the Site from 1966 to 1987, during which releases of chemicals had occurred. These chemicals have polluted the soil and groundwater beneath the site and may have migrated offsite. 495 East Brokaw Associates (hereinafter referred to as a discharger) is a discharger because of their ownership of the property. If any information comes to light that other parties are responsible for site soil and groundwater pollution, those parties shall also be named in this Order as dischargers. For purposes of this Order, 495 East Brokaw Associates will be responsible in the event that FMC fails to comply with the requirements of this Order.

4. HYDROGEOLOGY The Site is immediately underlain by a 45 foot thick sequence of clay and silty clay with minor amounts of thinly bedded laterally discontinuous fine sands and silts deposited in the Coyote Creek river flood plain. Root fragment- and caliche-bearing sediments, found 13-15 feet and 25-30 feet below the surface, are intercalated within the thick clay layer.

The first-encountered groundwater, the shallow water-bearing zone about fifteen feet below the ground surface, is in the clay and silty clays that extend downward approximately 45 feet below the ground surface. The second-encountered water-bearing formation, the A-aquifer, consists of silty to gravelly sand that extends downward to about 80 feet below the surface. Investigations have not gone below the deeper A-aquifer.

Groundwater flow in the shallow water-bearing zone is north to northeasterly with localized mounding conditions occurring around the site. Fluctuations in shallow groundwater levels have occurred due to seasonal effects. Groundwater flow direction for the A-aquifer has not been determined.

5. SOIL AND GROUNDWATER INVESTIGATIONS Subsurface soil investigations were initiated in late 1986 with one soil boring in the northeast corner of the property near a former metal chip (storage) drip area. Further soil investigations conducted from 1987 to 1989 by FMC and Brokaw Associates have characterized VOC soil pollution beneath former production areas, metal chip (storage) drip area, a reported drum storage area and proximate to subsurface sanitary and storm sewer drains (see Site Map, Appendix D). Investigations have included the drilling and sampling of thirty-nine, 15 to 30 foot-deep soil borings, 30 soil samples from soil excavations, 25 soil plugs from soil-gas survey points and approximately 42 soil samples from well borings to determine and confirm soil pollutant concentrations in various areas around the site.

Soil pollutant concentrations in soil removal areas were as high as 610,000 parts per billion (ppb) for tetrachloroethene (PCE), 800,000 ppb for trichloroethene (TCE), 28,000 ppb for toluene, 23,000 ppb for xylene, 3,300 ppb for 1,1-dichloroethane (1,1-DCA), and 190 ppb for PCBs. Excavation and removal of

polluted soil was conducted in eight areas between December, 1987 and September, 1988. After soil excavation and removal, soil VOC pollution remains principally on the east side of the site in previously defined areas. These include VOCs at concentrations as high as 17,000 ppb for PCE, 13,000 ppb for TCE, 990 ppb for trans 1,2-DCE, and 240 ppb for 1,1,1-TCA.

Twenty-eight shallow groundwater monitoring wells screen the shallow water-bearing zone 20 to 25 feet in depth. Significant VOC pollution is restricted to the shallow water-bearing zone. Groundwater pollution is downgradient (easterly) of former manufacturing areas and below the former metal chip (storage) drip area. Onsite groundwater pollution in the shallow water-bearing zone is manifested as chemical concentrations of VOCs up to 12,000 ppb TCE, 2,600 ppb PCE, 590 ppb trans 1,2-DCE, and 52 ppb vinyl chloride.

One deeper A-aquifer monitoring well, 53 feet deep, is located in the northeast portion of the site where the highest concentrations of shallow groundwater pollution have been detected. TCE has been detected at concentrations of 1 ppb in the deeper, A-aquifer in an area beneath the former metal chip (storage) drip area. Groundwater quality in the A-aquifer was confirmed in six other areas by in situ water sampling between 42 and 48.5 feet deep. No pollutants were detected in these six samples.

The dischargers submitted a report, "Comprehensive Site Assessment Report - Soil and Ground-water Conditions, 495 East Brokaw Road, San Jose, California, August 1989" which summarizes all environmental assessment work and soil remediation work performed by the dischargers between late 1986 and the present. Additional site characterization work may be needed along the east property side to further delineate the lateral and vertical extent of soil pollution. Additional characterization of the shallow water-bearing zone is needed to evaluate groundwater cleanup alternatives.

6. INTERIM REMEDIAL ACTIONS Interim soil remedial actions include excavation and removal of soil in eight areas beneath and outside of the building slab and pressure testing and repair of the sanitary sewer. Approximately 1200 cubic yards of polluted soil were removed from various sumps, furnace pits, foundry pits and machinery and conveyor system pits between December, 1987 and September, 1988. Soil was excavated up to 10 feet in depth to attain non-detect levels of pollutants. No interim actions for groundwater remediation have been taken.

7. SCOPE OF THIS ORDER This order contains tasks for implementation and evaluation of interim remedial actions, and preparation and implementation of final remedial actions. These tasks are necessary to alleviate the threat to the environment posed by soil pollution and migration of the groundwater pollution

plume, and to provide a substantive technical basis for designing and evaluating the effectiveness of final cleanup alternatives.

8. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and groundwaters.

9. The existing and potential beneficial uses of the groundwater underlying and adjacent to the facility include:

   a. Industrial process water supply
   b. Industrial service water supply
   c. Municipal and Domestic water supply
   d. Agricultural water supply

10. The dischargers have caused or permitted, and threaten to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and create or threaten to create a condition of pollution or nuisance.

11. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

12. The Board has notified the dischargers and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

13. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the dischargers shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS

1. The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. The dischargers shall conduct site investigation and monitoring activities as needed to further define the current local hydrogeologic conditions, and the lateral and vertical extent of soil and groundwater pollution. Should monitoring results show evidence of pollutant migration, additional characterization of pollutant extent may be required. Within 60 days of the Executive Officer's determination and actual notice to 495 East Brokaw Associates that FMC has failed to comply with this paragraph, 495 East Brokaw Associates, as landowners, shall comply with this specification.

3. The cleanup goal for source-area soil is 1 ppm for total VOCs. Alternate cleanup goals may be proposed based on site specific data. If higher levels of VOCs are proposed, the dischargers must demonstrate that cleanup to 1 ppm total VOCs is infeasible, that the alternate levels will not threaten the quality of waters of the State, and that human health and the environment are protected. If any constituents regulated under this Order (or their degradation products) are left in the soil a program of continued groundwater monitoring may be required. Final cleanup goals for source-area soils will be approved by the Executive Officer.

4. Final cleanup goals for polluted groundwater, onsite and offsite, shall be in accordance with State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California". Proposed final cleanup levels shall be based on a feasibility study of remedial alternatives that compare cost, effectiveness, time to achieve cleanup goals and an assessment of risk to determine effects on beneficial uses, human health and the environment. Cleanup levels shall also have the goal of reducing the mobility, toxicity, and volume of pollutants. Final cleanup levels shall be approved by the Regional Board.

5. If groundwater extraction and treatment is considered as an alternative, the feasibility of water reuse, reinjection, and disposal to the sanitary sewer must be evaluated. Based on the Regional Board Resolution 88-160, the

dischargers shall optimize, with a goal of 100%, the reclamation or reuse of groundwater extracted as a result of cleanup activities. The dischargers shall not be found in violation of this Order if documented factors beyond the discharger's control prevent the dischargers from attaining this goal, provided the dischargers have made a good faith effort to attain this goal. If reuse or reinjection is part of a proposed alternative, an application for Waste Discharge Requirements may be required. If discharge to waters of the State is part of a proposed alternative, an application for an NPDES permit must be completed and submitted, and must include the evaluation of the feasibility of water reuse, reinjection, and disposal to the sanitary sewer.

C. PROVISIONS

1. The dischargers shall comply with the Prohibitions and Specifications above, in accordance with the following time schedule and tasks:

TASKS AND COMPLETION DATES

a. TASK: QUARTERLY SAMPLING AND ANALYSIS PLAN

Submit Quarterly Sampling and Analysis Plan acceptable to the Executive Officer that contains at a minimum, the following; identification and locations of groundwater monitoring wells to be sampled, frequency of water level and water quality sampling, analytical methods, chain of custody, sampling and quality assurance/quality control procedures, and tabulated cumulative water quality analyses results and water levels. The plan shall use EPA 8240 open scan for VOCs and EPA tests for priority metals initially for all new wells and once for all existing wells. Thereafter, on a quarterly basis, other appropriate EPA 8000 series tests shall be used to analyze for VOCs and other EPA methods used for all detected constituents. The monitoring program will be implemented upon approval and reports submitted in accordance with Provision C.4.b.

COMPLETION DATE: May 30, 1990

b. TASK: SITE USE HISTORY

The dischargers shall submit a technical report acceptable to the Executive Officer about the site use-history containing the following information and descriptions necessary to evaluate potential responsible parties: 1) past ownership status, 2) descriptions of original site construction including

locations of sumps, pits and effluent lines, 3) manufacturing processes, 4) product delivery and storage locations, 5) a complete list of chemicals and metals used including annual quantities of each, and 6) locations of disposal, treatment, transfer and storage of waste products.

COMPLETION DATE: June 30, 1990

c. TASK: ADDITIONAL SOIL AND GROUNDWATER CHARACTERIZATION

Submit a technical report acceptable to the Executive Officer that develops and proposes a workplan for further characterization of soil and groundwater conditions and vertical and lateral extent of soil and groundwater pollution. The work shall include at a minimum, soil and groundwater sampling, analyses and evaluation of a potential offsite pollutant plume, shall determine the hydraulic properties of affected water-bearing zones and shall include a schedule for implementation of the tasks. In addition, the plan shall include Site Safety and Quality Assurance Project Plans that consider CERCLA guidance documents for format and content.

COMPLETION DATE: June 30, 1990

d. TASK: REPORT ON ADDITIONAL SOIL AND GROUNDWATER CHARACTERIZATION AND PROPOSALS FOR INTERIM REMEDIAL ACTIONS FOR SOIL AND GROUNDWATER

Submit a technical report to the Executive Officer summarizing the results of the site investigations, including work proposed in Provision C.1.c above. This report shall also include proposals for interim actions for soil and groundwater and a task and time schedule for implementation of proposed interim remedial actions. The report shall include proposed cleanup levels if different than levels specified in Specification B.3. and supporting evidence to justify those levels.

If groundwater extraction is proposed as an interim remedial action, the report shall include a plan of the extraction well network; a description of treatment and disposal for extracted groundwater; a plan-view map of all proposed and existing onsite wells, and all wells to be sampled for groundwater level and water quality monitoring; and a completed NPDES application that contains an evaluation of water reclamation pursuant to Specification B.5.

COMPLETION DATE: March 30, 1991

e. TASK: REPORT ON REMEDIAL ALTERNATIVES AND PROPOSALS OF FINAL CLEANUP OBJECTIVES AND ACTIONS

Submit a technical report acceptable to the Executive Officer that proposes final cleanup objectives and actions for all areas of the site where soil and groundwater pollution is detected. This report shall include: 1) evaluation of the effectiveness of the interim remedial measures, such as an estimation of the flow capture zone of extraction wells, establishment of the cones of depression by field measurements and presentation of chemical monitoring data; 2) analysis of saturated soil samples analyzed to indicate the effectiveness of groundwater extraction; 3) a feasibility study evaluating alternative final remedial measures; 4) the recommended measures necessary to achieve proposed final cleanup objectives, and; 5) the tasks and schedule necessary to implement the recommended final remedial measures.

This report shall also include a completed NPDES permit application if groundwater extraction is proposed as a final remedial action, and if an application has not been previously submitted under Task C.1.d. The application shall include an evaluation of water reuse pursuant to Specification B.5.

COMPLETION DATE: November 30, 1991

f. TASK: COMPLETE IMPLEMENTATION OF FINAL CLEANUP ACTIONS

Submit a technical report acceptable to the Executive Officer documenting the implementation of final cleanup actions in accordance with Task C.1.e. above as proposed and approved by the Board pursuant to Specifications B.3 and B.4.

COMPLETION DATE: 90 days after implementation of the actions as proposed and accepted by the Regional Board in accordance with Provision C.1.e.

g. TASK: SUBMIT FIVE YEAR STATUS REPORT

Submit a technical report acceptable to the Executive Officer containing the following:

1. The results of any additional investigative work completed,
2. an evaluation of the effectiveness of installed final cleanup measures,
3. additional measures to achieve final cleanup objectives and goals, if necessary,
4. a comparison of previously estimated costs with actual costs incurred and a revised projection of necessary to achieve final cleanup goals and objectives,
5. the tasks and time schedule necessary to implement any additional final cleanup measures,
6. recommended measures for reducing Board oversight activities,
7. describe the reuse of extracted groundwater, if any,
8. evaluate and document the removal and/or cleanup of polluted soils, and groundwater.

If final cleanup objectives have not been achieved through the implementation of the approved groundwater and soil remediation plans, this report shall also contain an evaluation addressing whether it is technically feasible to achieve these objectives with the approved remedial measures, and, contain a proposal for procedures to do so.

COMPLETION DATE: February 21, 1995

2. The submittal of technical reports evaluating interim and final remedial measures will include a projection of the cost, effectiveness, benefits, and impact on public health, welfare, and environment of each alternative measure. The remedial investigation and feasibility study shall consider the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300); Section 25356.1 (c) of the California Health and Safety Code; US EPA "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA", October, 1988 or any superseding CERCLA guidance documents with reference to Remedial Investigation, Feasibility Studies, and Removal Actions; and the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California".

3. If the dischargers are delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the dischargers shall promptly notify the Executive Officer.

4. The dischargers shall submit to the Regional Board acceptable reports on compliance with the requirements of this Order, and acceptable activity monitoring reports that contain descriptions and results of work performed. These reports are to be submitted according to a program prescribed by the Regional Board and outlined below.

a. **ON A MONTHLY BASIS**, for a period of one year after the first monthly report of this Order, technical reports on the status of compliance with this Order shall be submitted to the Board, commencing with the month of April, 1990, and due 30 days after the end of the previous month. Each report may be in a letter format covering the previous month and shall include, but are not limited to, the following:

1) Summary of work completed since submittal of the previous report, and work projected to be completed by the time of the next report.

2) Identification of any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles.

3) Written notification which clarifies the reasons for non-compliance with any requirement of this Order, and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order.

b. **ON A QUARTERLY BASIS**, technical compliance reports on groundwater monitoring shall be submitted to the Board, commencing with the July through September calendar quarter. The quarterly reports shall be submitted 30 days after the end of the previous quarter and may include the monthly report due concurrently, beginning with the September, 1990 monthly report included in the October 30, 1990 quarterly report. The quarterly reports shall include, but need not be limited to, the following information:

1) Tabulated analytical results of quarterly groundwater quality sampling analyses for all monitoring wells specified in the monitoring program using analytical methods specified in Provision C.1.a, and updated groundwater pollution plume maps based on these results.

2) Updated potentiometric surface maps, based on the most recent quarterly water level measurements for all affected water bearing zones monitored by onsite and offsite wells.

3) If groundwater extraction is a part of cleanup, include a cumulative tabulation of volume of extracted groundwater, quarterly analysis results for all groundwater extraction wells, and pounds of chemicals removed.

4) Updated well construction details for any additional wells that have been installed during the quarter.

5) Updated or revised reference diagrams including geologic cross-sections and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and identifying adjacent facilities and structures.

6) Identification and notification of non-compliance with groundwater monitoring requirements of this Order, as described in Provisions 4.a.2. and 4.a.3.

c. **ON AN ANNUAL BASIS,** technical reports on the progress of compliance with all requirements of this Order shall be submitted to the Board, commencing on January 30, 1991, and covering the previous year. Annual reports may include monthly and quarterly reports due concurrently. The progress reports shall include, but need not be limited to, progress on the site investigation and remedial actions, operation of interim and final remedial actions and /or systems, and the feasibility of meeting groundwater and soil cleanup goals.

5. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist or professional engineer, or a certified engineering geologist .

6. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain Quality Assurance/Quality Control records for Board review.

7. The dischargers shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

8. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:

   a. Santa Clara Valley Water District (Tom Iwamura)
   b. Santa Clara County Health Department (Lee Esquibel)
   c. City of San Jose (Steve Gubber)
   d. State Department of Health Services/TSCD (Howard Hatayama)

9. The dischargers shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:

   a. Entry upon premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.

   b. Access to copy any records required to be kept under the terms and conditions of this Order.

   c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

   d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the dischargers.

10. The dischargers shall file a report on any changes in Site occupancy and ownership associated with the facility described in this Order.

11. If any hazardous substance is discharged in or on any waters of the state, or discharged and deposited where it is, or probably will be discharged in or on any waters of the state, the dischargers shall report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information relative to: the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effect, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.

12. The Board will review this Order periodically and may revise the requirements when necessary.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on February 21, 1990.

Steven R. Ritchie
Executive Officer